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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/830,434 | 04/26/2001 | Makoto Kobayashi | 109352 | 7153 |

25944 7590 06/17/2003

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EXAMINER

SHAKERI, HADI

ART UNIT PAPER NUMBER

3723

DATE MAILED: 06/17/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

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| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Applicati n No. | Applicant(s) | |
| | 09/830,434 | KOBAYASHI ET AL. | |
| | Examiner | Art Unit | |
| | Hadi Shakeri | 3723 | |

-- The MAILING DATE of this communicati n appears n the cover sheet with the correspondenc address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8,11 and 20-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 11-18 and 20-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 11-18 and 20-31 are rejected under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cercone et al. in view of Tomita et al.

Cercone et al. discloses all the limitations of the above claims, i.e., forming a conventional sponges such as pads used to clean and polish, semiconductor wafers, col. 1, lines 26-33 and col. 3, lines 3-18, wherein a content of residue zinc (or ZnO) is 1 ppm or less, col. 2, line 22, wherein the pad comprises a base layer of nonwoven fabric and porous polyurethane surface layer, col. 2, lines 56-61.



Regarding supplying a polishing agent as disclosed by Cercone et al., col. 2, lines 31-34, cleaning is performed in a known manner, and a prior art noted, col. 1, line 27, is US Pat. 4,566,911 (Tomita et al.), in which it is disclosed that a surface of a workpiece is cleaned while continuously feeding a cleaning liquid, col. 1, lines 25-30. However in the alternative it is known in the art, as shown by Tomita et al., to use cleaning agent. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use cleaning agent, in view of Tomita et al., as a known method of cleaning requiring a very precise finishing.

3. Claims 11-18 and 20-31 are rejected under 35 U.S.C. 103(a) as obvious over Applicant's Prior Art in view of Cercone et al.

Prior art as admitted by the Applicant, e.g., page 1, meets all the limitations of the above claims, except for the polishing pad to have a content of residue zinc (or ZnO) of 2 ppm or less.

Cercone et al. teaches an extraction process to purify conventional sponges, such as rollers or pads, to the extent necessary for "ultimate cleaning" of semiconductor wafers and the like. Cercone et al. teaches that conventional sponges have closed pores that trap residue and trace amounts of metals and as the sponge wears these metals in addition to tiny fibrils formed during cross-linking and residue can damage the surfaces that are to be cleaned.



It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the pads used for polishing a semiconductor wafer in a mirror polishing process as admitted by Applicant by the extraction processes as taught by Cercone et al. to reduce or eliminate metal residue, such as zinc, in preventing damaging the workpiece, specially silicon wafers.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Response to Arguments

5. Applicant's arguments filed 4/29/03 have been fully considered but they are not persuasive.

In response to applicant's argument that the sponge of Cercone is used for cleaning and not polishing, it is noted that, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). However, as disclosed in col. 3, line 11, Cercone in describing the prior art states that the material, e.g., polymeric elastic member, is used for cleaning and polishing, which may be subjected to the purification treatment, since fibrils can come loose and damage the workpiece. Thus the invention teaches the use of open pores and reduction of metal residue applicable to cleaning and polishing.

The argument regarding the shape is not persuasive, since Cercone concentrates in disclosing one embodiment, but clearly discloses other shapes, e.g., pads, col. 1, line 31.

Regarding the use of material, polymeric material disclosed by Cercone is a polyvinyl acetal, it is noted that the features upon which applicant relies (i.e., shape and material used)

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are not recited in the rejected base claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993), and the limitations of a non-woven base material and foamed polyurethane is met by Cercone, col. 3, line 64, however, polyvinyl acetal based resin may be used for a porous abrasive polishing tool along with a polyester based resin as evident by cited reference Toyama et al.

With regards to the argument that Cercone does not teach or suggest that zinc compounds can cause damage on a wafer, it is noted that Cercone, specially in cleaning silicon wafers suggests a second extraction process to reduce the residues of elements such as zinc to 1 ppm or less, col. 4, lines 40-50, to prevent damage to the wafer, col. 1, lines 35-46.

Conclusion

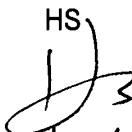
6. Prior art made of record and not relied upon are considered pertinent to applicant's disclosure. Toyama et al. is cited to show related inventions.

7. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Hadi Shakeri at (703) 308-6279, FAX (703) 746-3279 for unofficial documents. The examiner can normally be reached on Monday-Thursday, 7:30 AM to 6:00 PM. Official documents may be faxed to (703) 872-9302, after final to (703) 872-9303.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist at (703) 308-1148.



Joseph J. Hail, III
Supervisory Patent Examiner
Technology Center 3700

HS

June 4, 2003